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ABSTRACT

The Virtual Job Experience (VJE) is an interactive computer job simulation that allows learners to sample an occupation's actual tasks realistically. The effect of the VJE experience on students' career perceptions, explorations, and aspirations was examined in a study of 94 high school students enrolled in 3 summer school classes. Students were randomly assigned to different-sized groups that were in turn assigned to work with one of the following materials: (1) the VJE CD-ROM, which begins on the first day of a new job and requires users to carry out an important responsibility and make decisions in a team environment that result in realistic consequences; (2) an alternative commercially available interactive multimedia CD-ROM with career exploration video segments (called Moving on Up); and (3) a workbook describing the occupation of an advertising account executive. The students completed questionnaires before and after using the materials. On average, the VJE produced a 5-point increase in students' desire to work as advertising account executives, whereas the workbook produced a 6-point decrease. However, the differences varied depending on the size of the groups in which students worked. Students who used the VJE also manifested greater self-efficacy in dealing with the advertising industry. (MN)

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Virtual Job Experience: Try Before You Choose

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For many young people in the United States, the beginnings of their occupational cycle are marked by patterns of school, part-time employment, and full-time work. Often, the career choice is arbitrary and conducted with little or no actual experience with the tasks required in the occupation.

Much of the literature suggests that there is a strong correlation between having access and exposure to career information and subsequent career-seeking and planning behaviors (Bidwell, Schneider and Borman, 1995). Among college graduates, 69% stated that their college majors did not "fit" well enough with their current jobs to "definitely say yes" to keeping the same major if they had the chance to choose.

The Virtual Job Experience (VJE) is an interactive computer job simulation which offers young people a chance to sample the actual tasks of an occupation in a realistic manner. This research project was the first experimental test of the effects of the Virtual Job Experience with a high school population. The first VJE module tested here offered students an opportunity to have a first-hand interactive job experience in the life of an advertising account executive. The objective was to discern the career-related reactions of high school students to the VJE in comparison to a written and a computer-mediated information module on related topics.

Socialization to the World of Work

Many people choose an occupation based on a stereotype with little knowledge of what people in that occupation actually do or how it feels to work on the tasks and problems involved. Even "familiar" occupations such as teacher or police officer require skills and personal qualities that remain unknown to the external observer. According to Borow, "Socialization is the intricate process by which one acquires a view of the human world and its institutions, one's beliefs, loyalties, convictions of right and wrong, and habitual response modes".

Nowhere is the process of socialization more apparent than in our perceptions of the world of work. From a young child's naive response to "What do you want to be when you grow up?" to the farewell handshake of a retiring electrician, our ideas about work are in a state of constant evolution. Ginzberg underscored this notion: "Occupational choice is a lifelong process of decision making for those who seek major satisfaction from their work. This leads them to reassess repeatedly how they can improve the fit between their changing career goals and the realities of the world of work".

Learning is the mechanism behind socialization to the world of work. As individuals interact with their environment, they learn to form self-observation generalizations about themselves in relation to various occupations. The notion that one's career selection is shaped by social-learning experiences was described by the social-learning theory of career decision making (Krumboltz, 1979), the learning theory of career counseling (Krumboltz, 1996) and planned happenstance theory (Mitchell, Levin & Krumboltz, 1999). Briefly, this gradually evolving theory posits that genetic endowments and abilities, unplanned environmental experiences and events, uncountable numbers

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of learning experiences, and task approach skills all affect the process of career development.

Particularly for high school students who have exposure and access to computers and the Internet, the VJE could be a very powerful tool for inspiring career planning behaviors. The realistic format and context of the VJE are compelling. Studies have shown that children who perceive career schemata on television as being socially realistic are more likely to incorporate that career information into their own aspirations (Wright, Huston, Truglio, Fitch, Smith and Piemyat, 1995). Thus, the more socially realistic a career planning intervention is perceived to be, the more likely it is that the participant will incorporate it into their career aspirations and behaviors.

Ideally, one would try out an occupation by actually becoming employed in that occupation. Indeed, that is the laborious way in which most people discover the realities on an occupation. However, there are certain obvious difficulties with such an approach to career choice: Relatively few jobs may be sampled in this manner, the cost of job training or preparation can be prohibitive, and the consequences of job mismatches may be emotionally upsetting both to the individual exploring the occupation as well as others who may also be affected by this job search method. An interactive computer simulation such as the VJE is both a cost- and time-effective way of experiencing different career options without having to suffer these potential difficulties. The advantages of occupational simulation are most apparent in the use of flight simulators to train both military and civilian pilots. Pilots get realistic experiences in handling difficult flight situations and can learn from their mistakes at no cost except for a bruised ego. When the flight simulator crashes, there are no deaths and no property damage.

Our basic question is as follows: Will the VJE experience change career perceptions, explorations and aspirations in groups of different sizes more than control interventions?

Method

Sample

The participants were 94 volunteers from 125 students enrolled in three summer school classes at a 1700-student high school with 70% identified as minority located in the San Francisco Bay Area. There were 47 males and 47 females. The sample was quite diverse in the ethnicity of participants: 42 identified themselves as Mexican American or Hispanic; 30, Caucasian; 8, Asian American; 3, Native American; 2, Filipino American; 3, other; and 6 did not report their ethnicity.

There were 73 full-time students, 11 part-time students and 10 did not report their status. Almost half (N= 42) had jobs and were working a mean of 20.4 hours per week (SD = 7.6). Most were seniors (N =52), but there were also 39 9th graders, 1 10th grader, and 2 11th graders. In the school's tracking system 34 were in the G (General) track, 20 were classified as LEP (Limited English Proficiency), and 39 were classified as P (Primary language of instruction: Spanish).

Procedure

Three treatment conditions each using a different type of educational material were compared: (1) the Virtual Job Experience CD-ROM, (2) an alternative interactive multi-media CD-ROM involving career exploration called Moving on Up produced by Cambridge Educational Software, and 3) a Written control condition involving a workbook describing the occupation of advertising account executive. Participants were randomly assigned to work in groups of three different sizes: (1) one student working alone on one computer, (2) two students working on one computer, and (3) a "classroom" of 3 to 8 students working from one computer with the computer monitor projected onto a screen in the front of the room. The basic experimental research design studied three group sizes by three treatment conditions. However, the design was not fully crossed. The third treatment (the Written control condition) was administered only to students working alone, not to students in the other two group sizes.

Our replication of this design was constrained by the fact that not all students arrived for class on the day of our trial, necessitating re-randomization of subjects: This was done by assigning students to each group in order as they happened to walk into the classroom. However, the basic experimental design was replicated using two classrooms over three class periods in one school day. For each participant in the study, we administered a Pre-test, and after the treatment interventions, we administered a Post-test, to explore the participants' perceptions, aspirations and exploratory activities.

Treatments

Two of the treatments were accessed by computer-mediated CD-ROMs. The third treatment was presented as a written handout.

Virtual Job Experience (VJE). The VJE offers individuals the opportunity to experience an occupation first-hand by allowing them to "try out" an occupation--to engage in job-appropriate tasks, to confront real problems, and to get a feel for the work experience. The specific occupation being simulated is that of an advertising account executive. The users meet people representing other occupations as they plan a client presentation, do market research, evaluate art work and radio scripts, and select media for an advertising campaign using a spreadsheet. The CD-ROM branching component allows the users to receive normal corrective feedback and feel the success of correct responses. If users complete all the tasks successfully, they are praised by their boss and receive a personally addressed letter of thanks from their client. The script content was approved by consultants working in the advertising industry for its realistic portrayal of the work. While technically accurate, it is balanced with fun and humor. The actors are males and females from different ethnicities so as to welcome and inspire young people from all backgrounds.

The VJE simulation begins on the first day of a new job. Users are given an important responsibility and need to make a series of decisions in a team environment that result in realistic consequences. The teamwork aspect of the VJE is perhaps one of its most powerful learning components. While users directly experience the selected role, they also observe how the other members of the team (e.g., art director, copywriter) function in their roles. Thus, one simulation can deliver both a direct experience of one occupation while simultaneously exposing users to nine other interrelated occupations.

Moving On Up (Control CD-ROM). To control for the possibility that the effect of the VJE may be due simply to the novelty of using an interactive computer-mediated CD-ROM with video segments, a commercially available CD-ROM about career activities published by Cambridge Educational was selected. Their web site (http://www.cambridgeeducational.com/) describes the CD-ROM as follows:

An Interactive Guide to Finding a Great Job

This program cleverly takes viewers back to the basics to gain the skills necessary to advance in their jobs. Rather than teaching how to find any job, this program demonstrates ways to find a better job in today's economy. Utilizing footage from the video, Ten Ways to Get a Great Job, the program takes a refreshing look at how to find a job by showing viewers how to look now for opportunities that will help them in their careers later. In this interactive format, users view video clips packed with useful information and answer a series of related questions. Answer a question correctly, and the user proceeds. Answer a question incorrectly, and the program quickly reviews the video segment in which the information was covered.

Written Information. The Written condition was included to provide a control for the way in which occupational information is usually distributed--by the written word. The particular Written condition in this study consisted of a 38-page handout which reprinted material about the advertising industry culled from typical career books available in career center libraries. Articles included "A Day in the Life of an Advertising Agency," "The Creation of a TV Commercial, " a chapter describing the qualities of a great account manager, a chapter describing the advertising industry in general, and specific job descriptions of the following occupations: Account executive, assistant account executive, copywriter, media planner, market researcher and assistant art director.

Criterion Measures

Two questionnaires were administered, one just prior to the completion of the educational experiences, and one just after. Several sub-scales were included in one or both questionnaires:

Desire to Work as an Advertising Account Executive. One question was included in both the Pre and Post questionnaires as follows: "To what extent would you want to work as an advertising account executive?" Participants were asked to respond on a scale from 0 to 100 with 0 meaning "I would hate to work at that job," 100 meaning "I would love to work at that job," and 50 meaning "I'm uncertain if I would like or dislike that job." The Pre rating was subtracted from the Post rating to obtain a difference score. A positive difference would indicate the degree to which their desire had increased following the educational materials, while a negative score would indicate the degree to which it had decreased. The correlation between the Pre and Post ratings was .505 based on 73 participants who responded both times.

Self-Rated Impact of Using the Educational Material. Five statements making up this subscale were included in the Post questionnaire only, e.g., "I am more interested in exploring various career options now than before I used the educational material." Participants were asked to respond to each statement on a 5-point scale with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree." The Cronbach alpha reliability coefficient was .88 based on 93 participants who responded.

Career Exploratory Intentions. Eight items in both the Pre and Post questionnaires constituted this subscale, e.g., "Within the next month I plan to make an appointment with a counselor in the career center to discuss my career interests." Participants were asked to respond to each statement on a 5-point scale with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree." The Cronbach alpha reliability coefficients were .84 based on 89 participants who responded to the Pre questionnaire and .89 for the 91 who responded to the Post questionnaire.

Self-Efficacy in the Advertising Industry. On both the Pre and Post questionnaires seven items were included to assess the degree to which participants felt competent to perform tasks related to the advertising industry. For example, one item was worded as follows: "At this point in time, how confident are you that you can perform the tasks required of an Account Executive." Participants were asked to respond to each statement on an 11-point scale with 0 representing "I cannot do at all" and 10 representing "Completely certain I can do." The Cronbach alpha reliability coefficients were .88 based on 91 participants who responded to the Pre questionnaire and .92 for the 91 who responded to the Post questionnaire.

Results

The data were analyzed in three different ways: (1) A two-way analysis of variance (or covariance) on those participants who worked with the computer-mediated treatments with the independent variables being Treatment and Group Size. The two treatments were the VJE simulation and the Control computer-mediated information about advertising. The three group sizes consisted of those working alone, dyads and small groups (3 or more). (2) A one-way analysis of variance of those participants who worked alone on the three types of educational material: The VJE simulation, the Control condition and the Written material. (3) Correlations among the key variables.

Comparison of Computer-Mediated Treatments

How was the desire to work as an advertising account executive changed by the two computer-mediated treatments and the size of the group working together? The mean differences between Pre and Post are shown in Table 1.

TABLE 1

Change in Desire to Work as an Advertising Account Executive By Treatment and Group Size

	VJE			CONTROL		
Group Size	Mean	S.D.	N	Mean	S.D.	N
1	-1.5	22	11	14.0	54	5
2	10.9	24	11	-16.4	23	11
3+	5.3	17	15	-6.0	17	20
Total	5.0	21	37	-6.4	27	36

On the average the VJE simulation produced a 5-point increase while the Control condition resulting in a 6-point decrease. However, the differences in treatment were markedly different in groups of different sizes. When participants worked together in groups of 2 or in groups of 3 or more, the

desire to work as an advertising account executive increased even more in the VJE simulation treatment and decreased even more in the Control condition. However, among participants working alone with the materials, the trend was in the opposite direction. The ANOVA confirmed that there was indeed an interaction effect between treatment and group size significant at the .035 level. The average treatment and group size effects did not reach conventional levels of statistical significance (p = .204 and .533, respectively). It should be noted, however, that the N for the Control condition participants working alone was only 5 and that the SD was unusually large.

How did participants rate the impact that the educational materials had on their career planning process by treatment and group size? Table 2 shows that on average the VJE simulation produced about half a standard deviation higher impact score than the Control condition.

TABLE 2
Self-Rated Impact of Using the Educational Materials By Treatment and Group Size

	Treatment					
	VJE			CONTROL		
Group Size	Mean	S.D.	N	Mean	S.D.	N
1	3.42	.57	11	3.0	1.66	6
2	3.62	.71	12	2.85	.95	15
3+	3.27	.91	18	2.98	.75	21
Total	3.41	.77	41	2.94	.96	42

The direction of the difference was identical within all three group sizes. The treatment difference was statistically significant at p = .023. Neither the group size effect nor the interaction effect came close to reaching convention levels of statistical significance (p = .871 and .562, respectively).

Which of the five items making up the Impact variable made the largest contribution to the observed difference? All five items produced differences between treatments favoring the VJE simulation. The items in decreasing order of significance are shown in Table 3.

TABLE 3
Mean Self-Ratings of the Impact of the Educational Materials by Treatment

	VJE			CONTROL			
	Mean	S.D.	N	Mean	S.D.	N	p
I enjoyed using the experimental educational material.	3.85	.94	41	3.07	1.11	42	.001
I would like to use similar educational materials to explore other occupations.	3.80	1.14	40	3.33	1.20	42	.042
The experimental educational material helped me to make a career decision about working in advertising.	3.07	1.05	41	2.69	1.14	42	.064

	VJE			CONTROL			
	Mean	S.D.	N	Mean	S.D.	N	p
I am more interested in exploring various career options now than before I used the educational material.	3.37	.99	41	2.95	1.13	42	.160
I am closer to making a career decision now than before I used the educational material.	2.88	.87	41	2.64	1.08	42	.415

The change in intentions to engage in career exploratory activities slightly favored the VJE simulation over the Control condition in all group sizes, but the differences were too small to be statistically significant at conventional levels.

Self-efficacy in dealing with the advertising industry increased from Pre to Post in all group sizes for those exposed to the VJE simulation more than for those in the Control condition. In the Control condition self-efficacy actually decreased slightly for those in dyads and groups of 3 or more. However, none of these differences were large enough to be statistically significant at conventional levels.

Participants Working Alone

A small number of participants were randomly assigned to work alone with one of the three types of educational materials: the VJE simulation (N = 11), the Control condition (N = 6) and the Written material (N = 11). A one-way analysis of variance was employed to compare the means from each treatment on the various dependent variables. None of the differences even approached statistical significance at the conventional levels.

Correlations

All dependent variables were intercorrelated. Some of the more interesting correlations included the following:

Those who claimed the educational materials had a positive impact on them were more likely after treatment to desire working in the advertising industry ($r = .56$) and to express stronger intentions to engage in career exploratory activities ($r = .53$).

Those who after treatment were most confident about their ability to work in the advertising industry were more likely to desire that work ($r = .34$), feel the educational materials had a positive impact ($r = .51$), and express intentions to engage in career exploratory behaviors ($r = .54$).

Discussion

During high school, it is a particularly crucial time to explore careers. The number of learning experiences increases profoundly during the adolescent years. Typically, this occurs as the adolescent takes advantage of increased autonomy to engage with systems outside the family with greater frequency and duration until independence is realized, and adulthood is reached. However, the process of learning what it means to be an effective worker and in which occupation one may exercise this newfound knowledge is probably much different for today's adolescent when compared to past generations. Rather than a salient, visible production process that could have been experienced directly, today's adolescents confront the world of work indirectly,

amalgamating diffuse and unsystematic learning experiences to gain an understanding of its nature. For that reason, a method for infusing more realistic hands-on experiences becomes particularly useful.

The VJE is an engaging, easy to use, cost and time efficient instrument that offers a realistic portrayal of a career, but without the usual investment of frustration, time and energy in the traditional way of garnering this information, which is to actually get the job before you know what it entails. Furthermore, the VJE seems to encourage job seeking and preparation behaviors in general, and not just towards the specific professions that are highlighted in the program. Although longitudinal data is not yet available for this sample, the results predict that those students who took the VJE will increase the likelihood that they will explore what might entail a good career fit for them before choosing by becoming more educated about what specific jobs.

Conclusions

While any conclusions must be qualified because the dependent measures were all self-reported and because there are yet no follow up measures to assess long term effects, some tentative findings can be offered which show support for an interactive computer-mediated occupational simulation.

After meeting together in small groups while using the educational materials, participants expressed a greater increase in desire to work as an advertising account executive if they had used the VJE occupational simulation than if they had used the Control material. However, among participants working alone with the materials, the Control condition created a greater increase. This interaction effect was statistically significant beyond the .05 level.

On average participants taking the VJE simulation judged that it had produced a more positive impact on their career planning than the Control condition. The specific items contributing most significantly to that finding included these two: "I enjoyed using the experimental educational material" and "I would like to use similar educational materials to explore other occupations."

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